
Fostering Entrepreneurship in the CIS Sandbox

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Abstract

A fresh coat of paint and new furniture were the obvious external changes to an eleven-year-old computer lab at Bentley University when it was renovated in 2011. More difficult than changing the outward appearance of the room was changing the perceptions of what happens inside. The facility had a reputation of being a place where only students who needed help would go, and the role of assistants who worked there was limited to tutoring and maintaining equipment. This case study describes the transformation of a Computer Information Systems (CIS) department tutoring laboratory into a Learning and Technology Sandbox where student lab assistants are employed as staff of a startup company, whose responsibilities include not only tutoring, but managing the technology and business infrastructure, publicity, and day-to-day operations of the facility. Students who frequent the facility go for tutoring as well as to independently explore new technology. This study, which included both surveys and personal interviews of student workers and student attendees, suggests that through the use of web-based collaborative applications, social media, and a work environment that encourages exploration, the Sandbox has provided student workers with an opportunity to build skills as entrepreneurs, and changes the nature of what a computer lab can be for the students who frequent it.

Keywords: entrepreneurship, computer lab, social media, learning spaces

1. INTRODUCTION

Many students no longer look to the university computer lab as a place to go to use desktop computers. At universities where students have their own their laptops, the need to go to a particular place to use computer equipment or connect online is less of a priority. Specialized services, software, or equipment must draw students to these facilities. Providing customer service to patrons or tutoring to students enrolled in CIS courses remains the major responsibility of student workers who staff campus computing labs, but this alone may not attract students of varying abilities, skills, and interests.

The CIS Lab at Bentley University had not been modernized for over a decade; with the

renovation came the opportunity to change not only the physical space, but also the culture among the tutors and the students who use it.

Previous research describes the results of transforming this physical space into a collaborative learning environment (Frydenberg, Creating a Collaborative Learning Community in the CIS Sandbox, 2012) that is aligned with a virtual presence based on the use of social media tools. (Frydenberg, Aligning Open, Physical, and Virtual Spaces in the CIS Sandbox, 2012) This paper explores the enhanced role and learning experience of student workers, also referred to as tutors, in such a facility. Applying "start-up" values to the day-to-day operation of the lab, student workers now take on responsibilities of providing a service (tutoring), as well as administrative responsibilities of

managing, promoting, planning for, and maintaining the facility. In the process, they gain expertise using real-world web-based social media and collaboration tools.

Implementing such an environment in a university computer lab inspires these research questions:

- Will a "start-up" management approach help create a culture of engagement among both patrons and student workers?
- Will student workers seize the opportunity to develop entrepreneurial skills?
- Can working in informal learning environment promote the development of entrepreneurial skills?

2. CREATING A SPACE FOR LEARNING AND ENTREPRENEURSHIP IN THE CIS SANDBOX

Seneges, Seely Brown, and Rheingold define entrepreneurship as "the practice of identifying and creating all kinds of opportunities and then taking action aimed at realizing them." (2008, p. 126)

A first step in providing new opportunities in a computer lab setting was creating an inviting physical space where students would want to go. Figure 1 in Appendix I shows the former CIS Lab before renovations. The space, located then the basement of a classroom building, is approximately 900 square feet. It housed tables with 36 desktop computers around the perimeter, and a long work table at the center of the room. Networking equipment was mounted on the back wall.

Relaunched as the CIS Learning and Technology Sandbox, the renovated facility promotes collaboration and informal learning at group tables or in a lounge setting. Figure 2 in Appendix I shows the renovated facility. As the number of students who own laptops, tablets, and other mobile devices increases, (Smith, 2010) the remodeled space provides more desk space and fewer desktop computers. At the entry of the new facility are comfortable and easily-movable chairs and a 42" Google TV mounted on the wall, creating an informal living room setting. This area sets the business casual tone for the rest of the space.

One way to improve an entrepreneurial environment is to "reorganiz[e] work into fun," (Faltin, 2001, p. 22), and both the new layout and its name promote a sense of playfulness and discovery. Colorful stripes painted on the walls identify each work area. Learning stations with large, uncluttered tables containing a computer and a 42" monitor, and a wall-mounted SMART board facilitate group collaboration; 12 desktop computers running Linux, Windows 7, and Windows 8 pre-released software encourage discovery and are available for general use. A Mac desktop and a Windows 8 touch-screen computer are also available. An Xbox and Kinect provide a source of relaxation for both student workers and patrons when the lab is not busy, and an alternative platform for developing software applications through the use of standard software development kits. Sandbox workers are general need to know how to use all of these.

Lobler (2006) describes the role that informality plays in learning, and how entrepreneurs must enjoy what they are doing in order to be successful.

"Learning is a precondition for fun. ... It seems that we totally underestimate the value of playing and having fun for the purpose of learning, especially in learning entrepreneurial skills and competencies or characteristics. In general, if you are really interested in something you do not perceive your endeavors as work or learning but as fun! Achievement and fun is no contradiction, as typically can be seen in the field of successful entrepreneurs." (Lobler, 2006, p. 31)

The term "Sandbox" has a start-up connotation that encourages tech-savvy exploration, learning, and creativity, all entrepreneurial skills required in a business context. (UK Centre for Bioscience) In engineering, "a sandbox environment consists of a controlled set of resources for trying ... new app[lication]s without the risk of damaging critical parts of the system." (Malizia & Olsen, 2011, p. 210) Acadia University used the term to describe its institute for teaching technology, the primary on-campus resource for supporting computer-enhanced learning efforts. It has become "a place where all disciplines can meet and share ideas." (MacDougall, 1998, p. 33) Indiana State University also named their Instructional and Research Technology Services (IRTS) facility a

Digital Sandbox, acknowledging that their "sandbox allows faculty to experiment with new technologies with the help and guidance of IRTS staff." (Janz & Owen, 2004, p. 206)

The CIS Sandbox is more than an informal learning space; itself, it is managed as businesses where student workers take pride and responsibility in its day-to-day operations, as such, develop skills in industry-standard software tools, learn the importance of establishing good relationships with customers (students who frequent the lab), and claim ownership of the work they do.

Staffed by eight graduate students and 12 undergraduates, the facility is open seven days a week, for 14 hours per day during the week, 6 hours on Saturday, and 10 hours on Sunday. One graduate assistant is designated as the Administrative Manager, responsible for overseeing student worker schedules, maintaining the lab's calendar on Google calendar, and other administrative tasks. Another graduate student is designated the Technology Manager, responsible for training staff on the use of the equipment, installing software upgrades, and documenting procedures for use.

In addition to providing tutoring services to students in need of assistance, lab workers have planned special activities and programs on extracurricular IT topics to take place in the CIS Sandbox. These were designed to be of interest to advanced students. In the fall, they worked with the university's Microsoft representative to offer a workshop on xBox game development. In the spring, a university alumnus now employed at Mashery presented on mobile app development, APIs, and his role in the company. CIS Sandbox workers created the publicity for these events, flyers for which are shown in Figure 1.

These activities extend the reach of a computer lab and help create a community of learners in an informal setting. Such events were an unintended consequence precipitated by the ownership that several student workers took on when asked to consider what services the CIS Sandbox might provide beyond tutoring to attract a variety of students.



Figure 1. Students create posters and flyers for special events in the CIS Sandbox.

To enable student workers to take on these creative projects, and following an employment model at Google, (Mediratta & Bick, 2007) those who take on expanded roles are given one hour per week apart from their scheduled tutoring responsibilities to work on planning specialized activities in the CIS Sandbox.

3. TECHNOLOGIES FOR SOCIAL ENTREPRENEURSHIP

"Social entrepreneurship allows business professors to offer an experiential learning environment." (Wessel & Godshalk, 2004, p. 25) Student workers learn to use social media and other tools to promote the CIS Sandbox and its activities. The public face of the CIS Sandbox is

its Wordpress blog, to which student workers post approximately twice per month. Some blog posts reflect frequently-asked-questions that come up during tutoring sessions, others are on new technologies, tech-related events, interesting articles students read, or career-related posts. Facebook status updates and Twitter posts occasionally report new blog posts or special happenings in the CIS Sandbox, and add a social dimension, as students like or follow the facility. Students plan special workshops on extracurricular tech topics, and use EventBrite so participants can sign up for these events. One student worker is responsible for creating and digital signage using Prezi to draw students into the lab space.

Extending their tutoring skills beyond the physical lab, some tutors have created instructional screen cast demonstrations on how to software applications used in CIS courses, and post them on YouTube. Other tutors offer live chat tutoring via Meebo or Skype, and soon, Google+ hangouts. This provides virtual support to off-campus students and those who are unable to visit the lab's on-campus location.

Each of these activities provides an opportunity for students to develop skills in social entrepreneurship using current technologies which will provide good experiences as they prepare for their future careers. They enable "students to perceive the world (and especially social technology) as a learning opportunity ... that allows them to develop as humans and as professionals." (Senges, Seely Brown, & Rheingold, 2008, p. 126)

4. SURVEY AND INTERVIEW RESULTS

A survey was given to the CIS Sandbox staff at the end of the fall 2011 and spring 2012 semester. A total of 15 student workers completed the survey. Several were interviewed about their work experiences in the CIS Sandbox.

The UK Centre for Bioscience, the Canadian Foundation for Economic Education, and, Bilén, Kisenwether, Rzasas, & Wise (2005) identified several entrepreneurial skills. Student workers identified those which they felt were necessary to succeed in business, and those which they felt their work in the CIS Sandbox helped them develop, as shown in Figure 2.

Critical thinking, collaboration, creativity, and hard-working were the most popular skills that student workers felt were necessary to succeed; collaboration, resourcefulness, creativity, and tech savviness were the four most popular skills that they said they developed through their work in the CIS Sandbox.

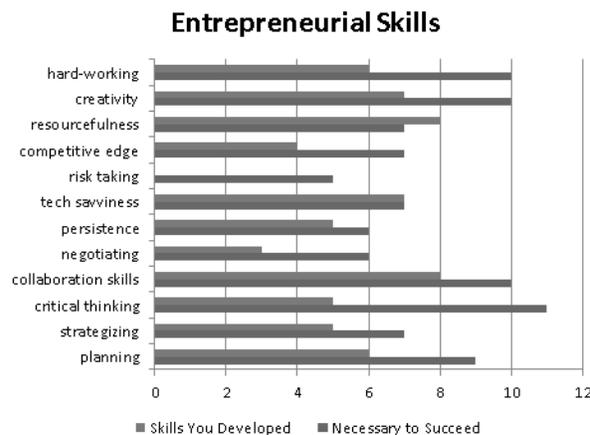


Figure 2. Entrepreneurial Skills developed by CIS Sandbox Workers.

Several workers commented on how their work assignments in the CIS Sandbox helped them to develop various entrepreneurial skills:

On risk-taking, one said: "I'm overall shy and have problem talking to native speakers. But in order to succeed in my job, I have to communicate not only with the students I tutored, but also with my coworkers. I am now more confident with my communication and skills to convey my idea precisely and concisely."

On critical thinking and resourcefulness: "Working with students on some of their assignments required critical thinking, creativity, and resourcefulness, especially when trying to help them complete the project in the way they wanted to do it. If they were completely wrong it sometimes took a bit of negotiating and convincing to show them better ways to solve their problems."

One lab assistant felt there was a bit of strategizing going on when planning "events and workshops [to make sure they] were well thought and addressed interesting topics" so they would be well attended.

Another claimed that "creativity and persistence are a must when working with a particularly

technologically challenged individual. I remember helping one student with a Java program who was literally typing my words into Eclipse. I'd lead her into it and say, 'so how can you get the value at position i in that array?' She'd type in 'array at $i =$ ' and run the program wondering why it doesn't work... I needed to rethink my method of communication and get my point across in a way that she'd understand."

Said one lab assistant, "Since I came in right at the very beginning, I've felt like [helping to shape the CIS Sandbox] has been a project of mine from the get go. I wasn't sure how much authority I'd have, or how I'd be able to influence that way things were done, but I and all the tutors were really able to ... take the wheel when it comes to making decisions."

Patrons of the CIS Sandbox recognized some of these skills in their tutors. Several commented on how they would help them outside of their scheduled work hours.

5. FUTURE ACTIVITIES

To provide an opportunity to develop proficiency in cloud-based CRM solutions, some student workers are currently investigating the use of Salesforce.com as a tool for managing help desk / tutoring requests and usage. Salesforce is the premier cloud-based Customer Relationship Management (CRM) software as a service provider, and provides grants for non-profit organizations to use the software at no cost. Involving students in this project gives them an opportunity to develop valuable skills using this software that they can use in their own organizations.

Another goal is to involve student workers in developing an improved social media plan to market the CIS Sandbox on facebook and twitter, and to encourage students who frequent the lab to take on a more active role in contributing to the Sandbox online presence by responding to blog posts, posting to the Sandbox Facebook page, and tweeting about their experiences or events at the CIS Sandbox.

Following the successful presentation with Mashery, the CIS Sandbox is partnering with the university's Career Services office to invite companies to offer information and recruiting sessions in the CIS Sandbox. This will attract CIS majors and minors to learn about career opportunities in an informal setting.

6. CONCLUSIONS

The CIS Sandbox presents an start-up approach to a university tutoring lab, and the responsibilities of the workers who staff it. Lab assistants have the flexibility to explore their technology interests, which results in extracurricular programming for students and the community. Taking on extended roles beyond tutoring enables student workers to interact with their peers, as well as with social media tools and collaborative technologies. Working in the CIS Sandbox provides an opportunity to learn about IT trends and concepts beyond what is covered in their classes, explore technology interests, and develop valuable entrepreneurial skills that will be helpful in their future careers.

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Appendix I



Figure 1. The CIS Lab, prior to renovation.



Figure 2. The renovated CIS Learning and Technology Sandbox.